Transpl Int (1993) 6: 348–349

Transplant International

Renal transplantation in patients with bilateral renal carcinoma – how long should we wait?

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Received: 26 November 1992/Received after revision: 11 February 1993/Accepted: 23 March 1993

Abstract. Patients with bilateral renal carcinoma or malignancy in a solitary kideny are best managed by radical nephrectomy with subsequent dialysis and transplantation. Because of the risk of recurrence of the tumour, the timing of the transplant procedure is important. We report on two patients with bilateral renal carcinoma who were subjected to radical nephrectomy and then managed with dialysis and transplantation within 6 months.

Key words: Renal transplantation – Bilateral renal cancer, renal transplantation – Timing renal transplantation, after carcinoma

Introduction

Adenocarcinoma of the kidney is the most common renal tumour affecting adults and represents approximately 80%–90% of all malignant tumours of the kidney. Bilateral renal cell carcinoma or malignant tumorus in solitary kidneys are uncommon and comprise less than 2% of patients presenting with renal cell carcinoma [6]. This latter group of patients presents the clinician with a difficult therapeutic dilemma.

Some patients can be managed by conservative, nephron-saving procedures, such as enucleation of the tumour [3], in situ partial nephrectomy [2, 8] or bench surgery with autotransplantation [1, 8]. However, the classical approach is radical nephrectomy, rendering the patient anephric, with subsequent dialysis and eventual cadaveric renal transplantation [5].

We report on two cases of bilateral renal cell carcinoma managed by bilateral nephrectomy, dialysis and early transplantation.

Case reports

Case 1

An 18-year-old female with tuberous sclerosis presented in April 1969 with symptoms related to an adenocarcinoma of the right kidney and a right nephrectomy was performed. At that time the left kidney appeared normal, both on intravenous pyelography and intra-operative inspection. In February 1972 an adenocarcinoma in the lower pole of the left kidney was noted and a partial nephrectomy was performed. In August 1979 she presented with adenocarcinoma in the remaining portion of the left kidney and a radical nephrectomy was performed. At that time she was established on maintenance haemodialysis. Pathological examination of each kidney revealed numerous tumours ranging in size from 0.5 to 2 cm, confined to the kidney. The tumours were moderately differentiated adenocarcinomas.

In February 1980, 6 months after the radical nephrectomy, she underwent a cadaveric renal transplantation. She was extensively investigated prior to the transplantation to exclude recurrent or residual tumour.

The patient has remained well with good renal function (serum creatinine 116 mmol/l) for more than 10 years after the transplantation without any evidence of recurrence of the tumour. Immunosuppression has consisted of azathioprine and steroids.

Case 2

This 44-year-old man presented in January 1989 with a history of a vague pain in the left loin and loss of weight. Investigation of the patient, which included a CT scan of the abdomen, revealed a large encapsulated mass in the left kidney with extension of the mass into the tail of the pancreas. There were also smaller masses in the middle and lower poles of the right kidney. The patient underwent a left nephrectomy and distal pancreatectomy. Vascular access was established and a right nephrectomy was performed in September 1989. Thereafter, the patient was commenced on haemodialysis. Pathological examination of the left kidney revealed a 12-cm mass in the hilum of the kidney with several other tumours. Histologically, the tumours were adenocarcinomas.

In November 1989, 3 months after the right nephrectomy, the patient underwent successful cadaveric renal transplantation. The patient was extensively investigated prior to transplantation to exclude the presence of overt residual tumour. The immunosuppression protocol consisted of cyclosporin and steroids for the first 6 months and azathioprine and steroids thereafter.

The patient remains well more than 2 years after the transplant procedure with a serum creatinine of 105 mmol/l and without any evidence of recurrence of the tumour.

Discussion

The treatment of bilateral renal cancer or cancer in a solitary kidney is difficult and frequently hazardous. Radical surgical excision remains the definitive form of treatment

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and offers the best chance of cure. Since the patients are rendered anephric by total nephrectomy, dialysis followed eventually by cadaveric renal transplantation forms part of the long-term management.

In carefully selected patients with low-grade, low-stage renal cell carcinoma more conservative, parenchymal-sparing operations may be feasible and include encapsulectomy or enucleation, partial nephrectomy, and extracorporeal or bench surgery with autotransplantation. Enucleation is indicated in multiple bilateral renal tumours, such as in von Hippel-Lindau disease. Since it is difficult to obtain adequate tumour margins, recurrence rates are high, ranging from 3% to 30% [3, 8]. Partial nephrectomy for a peripheral renal tumour, especially in the polar regions, is associated with low recurrence rates [8]. In patients in whom in situ surgery does not seem to be feasible, extracorporeal partial nephrectomy and autotransplantation can be successful [7]. Bench surgery and autotransplantation, although associated with low recurrence rates, is not without problems and arterial and venous thrombosis in the transplanted kidney does occur.

We present two patients with bilateral renal cell carcinoma who were managed by radical nephrectomy with subsequent dialysis and eventual cadaveric renal transplantation. The timing of the transplant procedure in patients subjected to radical nephrectomy for bilateral renal malignancies is of vital importance [4, 5]. According to Penn, 48% of the patients who were transplanted within 12 months after nephrectomy developed recurrences. The recurrence rates for patients transplanted 13–24 months and 25–36 months after treatment of their cancers were 20% and 14%, respectively [4]; interestingly, there were no recurrences in the patients who waited for longer than 48 months for their transplant. Furthermore, patients who were transplanted and were subjected to nephrectomy for unsuspected asymptomatic tumours in the host kidney showed very little tendency for the tumour to recur [4]. Penn concluded that the longer the waiting period before transplantation, the less chance of recurrence after transplantation. He recommended a waiting period of at least 12–24 months.

Most of the previous reports on renal transplantation in patients with renal malignancies, inclduing those from Penn, were from the pre-cyclosporin era. The pre-cyclosporin immunosuppressive regimens were associated with an increased incidence of de novo malignancies in transplant recipients. The introduction of cyclosporin has not led to a further increase in the incidence of malignancies. With cyclosporin, the overall immunosuppression is less. Therefore, the risk of recurrence of tumour in patients subjected to transplantation after treatment of renal malignancy may now be lower.

It is possible that some of the patients who developed a recurrence soon after transplantation could have had occult secondary tumours present prior to transplantation that were not detected by crude screening tests. Newer screening methods, such as the CAT scan and the nuclear magnetic resonance (NMR) scan, are much more sensitive at detecting metastatic tumour. Thus, if an extensive evaluation protocol was used that included a CAT scan and an NMR scan after the nephrectomy and prior to the transplant procedure patients with small metastatic tumour deposits could be detected and not referred for transplantation. This would theoretically result in a lower rate of recurrence of tumour in the patients subjected to transplantation soon (< 12 months) after the nephrectomy. Both of the patients referred to in this report were extensively evaluated before transplantation to exclude the presence of metastatic tumour.

We present two patients with bilateral renal carcinoma in whom conservative parenchymal-saving operations were not feasible. Both patients were treated by total nephrectomy and subsequent dialysis. Cadaveric renal transplantation was performed in both cases within 6 months after the nephrectomy. One patient has survived for more than 10 years after transplantation without evidence of recurrence of the tumour. The other patient is alive and tumour-free more than 24 months after transplantation.

Thus, the timing of transplantation after total nephrectomy in patients with bilateral renal cell carcinoma remains unresolved. The recommendation based on previous data is that there should be a waiting period of 12–24 months. However, the introduction of new immunosuppression regimens, including cyclosporin, and the use of more sensitive screening methods to detect occult metastatic tumour may modify the recurrence rates, especially in patients who are transplanted early. New data is required to assess the impact of new immunosuppressive agents on the recurrence rates of tumours. Based on two patients, we feel that a shorter waiting period after nephrectomy may be justified.

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